

WHAT IS CLAIMED IS:

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1. A film lamination method for laminating a film on a principal surface of a semiconductor substrate by using a rotatable roller having a heat-generating part therein, the film lamination method comprising:

pressing the roller onto the film placed on the principal surface of the semiconductor substrate while generating heat by the heat-generating part; and

15 rolling the roller on the film so as to
laminate the film on the semiconductor substrate by
heat from the heat-generating part.

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2. The film lamination method as claimed in claim 1, wherein said roller includes a cylindrical metal body and a resin layer formed on an outer surface of the cylindrical metal member, and wherein the heat-generating part is provided in a central portion of the cylindrical metal member so as to extend in an axial direction of the cylindrical metal member.

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3. The film lamination method as claimed
35 in claim 2, wherein said resin layer is formed of a
fluoride resin.

4. The film lamination method as claimed in claim 1, wherein said roller is a cylindrical elastic member, and a plurality of heat-generating parts are arranged near an outer surface of the 5 cylindrical elastic member.

10 5. The film lamination method as claimed in claim 4, wherein said cylindrical elastic member is made of rubber or plastic.

15 6. The film lamination method as claimed in claim 1, wherein said roller includes a plurality of short rollers each having a width smaller than a 20 width of said semiconductor substrate so that the film is laminated on the semiconductor substrate by pressing the plurality of short rollers sequentially on the film placed on the principal surface of the semiconductor substrate and rolling the short 25 rollers on the film.

30 7. A film lamination method for laminating a film on a principal surface of a semiconductor substrate by using a table supporting the semiconductor substrate and a rotatable roller, the table having a plurality of heat-generating 35 parts therein, the film lamination method comprising pressing the roller onto the film placed on the principal surface of the semiconductor substrate and

rolling the roller on the film while selectively activating the heat-generating parts in response to a movement of the roller so as to laminate the film on the semiconductor substrate by heat from the 5 heat-generating parts.

10 8. The film lamination method as claimed in claim 7, wherein said heat-generating parts are arranged so as to be parallel to a direction perpendicular to a laminating direction and thermally isolated from each other.

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9. A film lamination method for laminating a film on a principal surface of a semiconductor substrate by using a rotatable roller and a table supporting the semiconductor substrate, a heat-generating part being movably provided under the table, the film lamination method comprising 20 25 30 pressing the roller onto the film placed on the principal surface of the semiconductor substrate and rolling the roller on the film while moving the heat-generating part in response to a movement of the roller so as to laminate the film on the semiconductor substrate by heat from the heat-generating part.

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10. A film lamination apparatus comprising:

1. a table on which a semiconductor substrate to be processed is placed and fixed; and

2. a roller pressing an attachment film onto the semiconductor substrate while rolling on the
5 attachment film,

wherein said roller includes:

a cylindrical metal member;

a heat-generating part provided in the cylindrical metal member; and

10 a resin layer covering an outer surface of said cylindrical metal member.

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11. A film lamination apparatus comprising:

a table on which a semiconductor substrate to be processed is placed and fixed; and

20 a roller pressing an attachment film onto the semiconductor substrate while rolling on the attachment film,

wherein said roller includes:

a cylindrical elastic member; and

25 a heat-generating part provided in the cylindrical elastic member.

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12. A film lamination apparatus comprising:

a table on which a semiconductor substrate to be processed is placed and fixed; and

35 a roller assembly having a plurality of short rollers each pressing an attachment film onto the semiconductor substrate while rolling on the

attachment film,

wherein said roller assembly includes a plurality of heat-generating rods parallel to a direction perpendicular to a laminating direction, 5 the heat-generating rods provided with cylindrical metal members, respectively, so that parts of the cylindrical metal members overlap with each other in an axial direction of the heat-generating rods.

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13. A film lamination apparatus
15 comprising:

a table on which a semiconductor substrate to be processed is placed and fixed;

20 a roller pressing an attachment film onto the semiconductor substrate while rolling on the attachment film; and

a heat-generating part provided in said table, wherein the heat-generating part is divided into a plurality of small heat-generating parts arranged in a direction of movement of the roller.

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14. A film lamination apparatus
comprising:

30 a table on which a semiconductor substrate to be processed is placed and fixed;

a roller pressing an attachment film onto the semiconductor substrate while rolling on the attachment film; and

35 a heat-generating part provided under said table, the heat-generating part being movable in response to a movement of said roller.

15. A manufacturing method of a semiconductor device, comprising the steps of:

5 grinding another principal surface of the semiconductor substrate so as to thin the semiconductor substrate;

10 applying an attachment film onto the another principal surface of the semiconductor substrate; and

15 individualizing the semiconductor substrate into a plurality of semiconductor elements, wherein the attachment film is laminated on the semiconductor substrate by pressing the attachment film placed on the another principal surface of the semiconductor substrate by a

20 15 rotatable roller having a heat-generating part therein and rolling the roller on the attachment film while generating heat by the heat-generating part.

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16. A manufacturing method of a semiconductor device, comprising the steps of:

25 25 grinding another principal surface of the semiconductor substrate so as to thin the semiconductor substrate;

30 applying an attachment film onto the another principal surface of the semiconductor substrate; and

35 individualizing the semiconductor substrate into a plurality of semiconductor elements, wherein the attachment film is laminated on the semiconductor substrate by pressing by a

35 30 rotatable roller the attachment film placed on the another principal surface of the semiconductor substrate that is placed on a table provided with a

plurality of heat-generating parts therein and
rolling the roller on the attachment film while
selectively causing the heat-generating parts to
generate heat in response to a movement of the
5 roller.

10 17. A manufacturing method of a
semiconductor device, comprising the steps of:
grinding another principal surface of the
semiconductor substrate so as to thin the
semiconductor substrate;

15 applying an attachment film onto the
another principal surface of the semiconductor
substrate; and

individualizing the semiconductor
substrate into a plurality of semiconductor elements,
20 wherein the attachment film is laminated
on the semiconductor substrate by pressing by a
rotatable roller the attachment film placed on the
another principal surface of the semiconductor
substrate that is placed on a table for supporting
25 the semiconductor substrate and rolling the roller
on the attachment film while moving a heat-
generating part provided under the table in response
to a movement of the roller, the heat-generating
part generating heat while moving.

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